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# REPORT

**Medical-Biological, Epidemiological, Dosimetrical, Computer-Informational, Administrational Activities for Implementation of Joint BelAm Scientific Protocol for the Studies of Thyroid Cancer and Other Thyroid Diseases in Belarus Following the Chernobyl Accident in the Framework of Invoice for the period of 01.01.1999 - 31.03.2000**

| | |
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MINSK, 2000

## TASK No. 1: THE MANAGEMENT AND ADMINISTRATION OF THE BELAM THYROID STUDY

### Milestone 1: Weekly meetings with the group leaders to discuss the progress of the Project, and their reflection in the minutes

For the first quarter 12 working meetings were conducted with Project Units Leaders. Weekly the Leaders reported for performed activity. All planned measures have been performed. A separate meeting was dedicated to a new form at of quarter scientific report. It was recommended to prepare reports in accordance with the new format. During the meetings it was also discussed a working plan for 2000. The plan was worked out and adopted by the Project Director.

The following questions have also been discussed at the weekly meetings:

1. Conducting of pilot stage of subjects screening in Gomel Dispensary. 85 subjects have been examined. Study forms have been transferred to Minsk (DCC, Central Laboratory)
2. Involvement of Gomel Dispensary to Project activity. Arrangement of Epidemiological, Dozimetry, and Screening Groups. Locating of cohort subjects, their identification and invitation to screening, medical examination. Description of Gomel Branch activity was sent to Dr.Masnyk (NCI)
3. Scheduling of mobile team (Minsk Dispensary) trips. The schedule was adopted by Health Care Department of Gomel Administration and was coordinated with Medical Directors of appropriate raions.
4. Conducting of laboratory tests (blood and urine). The laboratory was run out of reagents. BRAHMS did not deliver on a regular base reagents. As a result, physicians could not make final diagnoses and administer appropriate treatment to the patients. Notification letters have been sent to BRAHMS and NCI. At the end of March the reagents were received but the set of reagents was incomplete.
5. Inviting of cohort subjects to examination. Recruiting of cohort subjects was complicated by subjects refusal from examination. Epi Group was recommended to clarify addresses and visit appropriate raions 3 weeks in advance to the visit of mobile team in order to settle organizational questions with Administration of the raions and Hospitals. After introducing of the new approach, patient flow has been increased.
6. During weekly meting there were also discussed questions concerning expenditures, publishing of booklet, greeting and invitational letters, etc. A variant of booklet has been suggested to publishing house for their consideration.

### Milestone 2: Administrative support of cohort establishment to supply access to various informational sources, especially sources of address information

For the reported period administrative support was provided in Narovlia, Bragin, Khoiniki, Vetka, Dobrush, Mozyr, Zhlobin, Kalinkovichi raions. Medical Directors of Central Regional Hospitals and physicians of villages medical stations were involved to work. The Dispensary of Radiation Medicine provided with a van for field trip which brought the specialists and the patients to the places of examination

Field trips expenses have been covered to 22 specialists who worked in field team for 30 days.

### Milestone 3: Coordination between Belarus and U.S. participants with respect to all activities of the Project

Coordination between Belarus and U.S. participants covered the following items:

2. Coordination of visits of the US specialists to Minsk in 2000
3. Preparation to the meeting with ACERER Group (16-19 April, 2000)
4. Preparation to the plenary meeting of Belarus and US specialists in Gomel (5-10 June, 2000)
5. Preparation of appropriate documents for ISTC. The documents from Belarus have been sent to the NCI to make necessary arrangements with the State Department. After this they will be applied to ISTC Moscow.
6. Incentives for cohort subjects. Arrangement of money transfer for humanitarian aid to the cohort subjects undergone screening examination through the Red Cross Society.
7. Financial support for 2000. Financial arrangement between NCI and Ministry of Health has been signed. At present we are looking for a sub-contract with Columbia University to get the funds.
8. Local purchasing of expenditures
9. Purchasing of vehicles. Contracts have been prepared and passed to Columbia University.
10. Publishing strategy and participation in international scientific conferences. It was decided to act in accordance with the procedure worked out by NCI.
11. Improvement of reagents deliveries. It was decided to inform NCI monthly about situation with reagents and notify BRAHMS of terms of shipment.

**Milestone 4: Prepare materials for publication in newspapers and radio broadcasting aimed at Project promotion in mass media**

In order to explain to population the benefits of participation in BelAm Project 4 articles were prepared and issued in the local newspapers.

Project Director made a TV presentation where he informed about BelAm project.

There were conducted 6 meetings with medical community in the places of mobile team activity.

## TASK No. 2: THE ESTABLISHMENT OF THE COHORT OF SUBJECTS FOR STUDY

**Milestone 5: Work to locate provisional cohort of 12.000 and select at least 2.100 accessible to the Minsk Dispensary and to the mobile team**

*(Data Coordinating Center)*

Activity aimed at location of provisional cohort subjects and their invitation to screening examination was performed inside the file of 39188 as it was agreed with American side to go through the whole file of direct measurements. By that time the number of located provisional subjects was 16656. To locate the subjects arrays of information have been passed to addresses offices

| | |
|---|---|
| Gomel Address Office | 9930 inds. |
| Minsk Address Office | 4049 inds. |
| Mogilev Address Office | 2677 inds. |

As a result of performed searching activity in the address offices of Gomel and Minsk and in order to invite to participation those who does not want or does not have opportunity to come to Minsk for examination arrays of information have been prepared that allowed to conduct examination of subjects through three trends

- Examination in the stationary center, Minsk
- Examination by mobile teams of Minsk Screening Center
- Examination in the stationary center, Gomel.

Table 1 reflects the results of examination conducted by mobile teams of Minsk Screening Center. For examination by mobile teams there were taken newly located subjects as well as subjects having the following statuses in the data base: no response within a month, having given preliminary consent but absent from examination, reserve, located new address.

**Table 1**

**Examination conducted by mobile teams of Minsk Screening Cenre**

| Raion | Time period of mobile team activity | Number of invited subjects | Number of subjects undergone examination | |
|---|---|---|---|---|
| | | | abs | %* |
| Narovlia | 24.01.2000 – 26.01.2000 | 353 | 36 | 10.1 |
| Mozyr | 27.01.2000 – 28.01.2000 | 198 | 61 | 30.8 |
| Kalinkovichi | 29.01.2000 | 79 | 39 | 49.36 |
| Bragin | 7.02.2000 – 8.02.2000 | 208 | 27 | 13 |
| Khoiniki | 09.02.2000 - 25.02.2000 | 980 | 278 | 28.4 |
| Buda-Koshelevo | 13.03.2000 - 14.03.2000 | 246 | 89 | 36.2 |
| Zhlobin | 15.03.2000 - 16.03.2000 | 227 | 63 | 27.8 |
| Rogachev | 17.03.2000 – 18.03.2000 | 171 | 68 | 39.8 |
| Dobrush | 27.03.2000 – 28.03.2000 | 137 | 63 | 46 |
| Vetka | 29.03.2000 – 31.03.2000 | 255 | 65 | 25.5 |

*- % from the number of invited subjects.

To examine subjects by stationary teams of Minsk Screening Center and Gomel Branch subjects with newly located addresses (by the results of searching in Gomel and Minsk address offices) have been invited (Table 2):

**Table 2**

**Examination of subjects conducted by stationary screening centers of Minsk and Gomel**

| Searching source | Period of invitation to screening | Number of invited | Number of examined | |
|---|---|---|---|---|
| | | | abs | %* |
| Minsk Screening Center | 1.01.2000 – 31.03.2000 | 3689 | 802 | 21.7 |
| Gomel Screening Center | 1.01.2000 – 31.03.2000 | 233 | 85 | 36.5 |

*- % from number of invited to examination.

*(Epi Group)*

To implement given task locating of 16,656 subjects was performed through address offices of Minsk city, Goomel city and Mogilev city. Table 3 presents the outcomes of this activity from Gomel and Mogilev address offices.

**Table 3**

**Outcomes of provisional cohort subjects locating through address offices**

| Outcomes | Address Office | | | | Total | |
|---|---|---|---|---|---|---|
| | Minsk city | | Gomel city | | | |
| | abs | % | abs | % | abs | % |
| Located address | 1855 | 45,8 | 3421 | 34,5 | 5276 | 37,7 |
| Not found | 2151 | 53,1 | 6140 | 61,8 | 8291 | 59,3 |
| Moved out of Belarus | 15 | 0,4 | 252 | 2,5 | 267 | 1,9 |
| Duplicates | 1 | 0,02 | 13 | 0,1 | 14 | 0,1 |
| Non-acceptable by age | 2 | 0,05 | 2 | 0,02 | 4 | 0,03 |
| Imprisoned | 5 | 0,1 | 26 | 0,3 | 31 | 0,2 |
| Death | 7 | 0,2 | 27 | 0,3 | 34 | 0,3 |
| Moved within Belarus | 13 | 0,3 | 30 | 0,3 | 43 | 0,3 |
| Military service | - | - | 18 | 0,2 | 18 | 0,13 |
| Dregs of society | - | - | 1 | 0,01 | 1 | 0,007 |
| **Total** | **4049** | **100** | **9930** | **100** | **13979** | **100** |

As a result of performed activity 5,276 individuals have been located (37.7%). 4,220 subjects located through Address Offices of Minsk and Gomel, and also those who was absent from examination were appointed to screening examination to Minsk and Gomel stationary Screening Centers. 2,634 inds. Were appointed to examination by Minsk mobile team . Their addresses were identified through address office of Gomel city and specified through Central Regional Hospitals of Narovlia, Mozyr, Kalinkovichi, Bragin, Khoiniki, B-Koshelevo, Zhlobyn, Rogachev, Dobrush, Vetka raions of Gomel oblast.

In general, to provide a patient flow to screening examination 6854 invitational letters have been sent to provisional cohort subjects in the first quarter.

**Milestone 6: Determine the location of geographical areas with great number of people with identified current addresses for possible examination by mobile teams.**

In the first quarter of the current year there were defined 10 raions of Gomel oblast were the majority of provisional cohort subjects live. In these raions located subjects live who were absent from examination following repeated invitations, and those who were invited for the first time.

In January epidemiologists moved to Narovlia, Mozyr, and Kalinkovichi raions, in February – to Bragin and Khoiniki raions, in March – B.-Koshelevo, Zhlobin, Rogachev, Dobrush, and Vetka raions. The main task of these visits was to provide patient flow to examination and verification of their addresses through personal contacts with local medical staff. To fulfil this task the following measures have been undertaken: transportation of subjects to the places where mobile team operated, mobile team visits to village medical stations to conduct screening, cooperation with local medical staff, cooperation with local mass media.

As a result of performed measures 788 subjects have been screened. The highest percentage of those undergone examination was in Dobrush (62,1%), Kalinkovichi (51,3%), Roogachev (49,6), and B.-Koshelevo (43,3%). Among the reasons of low activity of the subjects were their indifference towards their health state. To these subjects repeated invitational letters were sent, explanatory work was performed but it was useless. Subjects refused from examination without explaining the reasons, or even did not respond to invitations. We think for such subjects it is reasonable to provide some humanitarian aid to motivate their coming to examination.

**Milestone 7: Conduct epidemiological interview of the cohort subjects to find out the ways of intensifying of cohort establishment.**

To improve efficiency of cohort establishment epidemiologists interviewed cohort subjects undergone screening examination in Minsk Screening Center

100 subjects have been interviewed including 36 aged 14-18, 55 subjects aged 18-25, and 9 subjects were older than 25 y.o. Among interviewed subjects there were 46 male and 54 female. From the 100 interviewed subjects only 7 were from rural area.

98 subjects were initially examined, and 2 undergone repeated examination.

Trip to the Dispensary took less than 1 hour in 49% of interviewed subjects, from 1 to 4 hours in 50% and more than 12 hours in 1% subjects.

To the interviewed subjects a question was asked if they were aware of the Project. 75 subjects answered that the duration of the Project will be from 20 to 30 years and examination will be performed once two years, and 25 subjects gave negative answer. To the question what medical examination they will proceed 98 subjects answered that they realized preference of thyroid pathology in the examination, and 2 individuals gave negative answer; 54 individuals suggested collection of blood and urine samples.

To the question for how long did they wait in the registry office of the screening center 42 subjects answered < 5 min., 54- <20 min., and 4 subjects waited for 20 minutes.

For how long did they wait for ultrasound examination: 63 subjects answered - from 10 to 20 minutes, 25 subjects - from 20 minutes to 1 hour, and 12 subjects - for more than 1 hour.

For how long did dosimetry interview last 35 subjects answered < 10 minutes; from 10 to 20 minutes - 63 subjects; > 20 minutes - 2 subjects.

All the subjects gave positive answer to the question if they were satisfied with the procedure of medical examination.

To the question what part of medical examination need to be improved: 9 subjects pointed out waiting for a long time to ultrasound examination, 4 subjects - to endocrinology examination, 3 subjects were afraid of blood collection, and 2 subjects found it difficult to answer the questions of dosimetry interview.

All interviewed subjects expressed their will to come to the examination next time.

5 subjects would like to receive reimbursement of their travel costs.

It should be noted that all interviewed subjects expressed the following opinion

- all respondents consider arrangement of examination satisfactory;
- 10 subjects pointed out thorough and kind attitude of the specialists;
- 1 subject expressed his wish to get an advice from specialists with respect to way of life and preventive measures in conditions of radioactive contamination.;
- 1 subject expressed his wish to get some meal in the dispensary as far as laboratory tests are made on an empty stomach;
- 1 subject expressed his wish that endocrinologist asks the subject about his/her concerns as far as sometimes it is not very easy for a subject to start speaking about this;
- 20% of interviewed subjects expressed their wish to arrange a waiting area in a better way with access to booklets covering the reasons of thyroid diseases and preventive measures;
- that all examination stations were in one place;
- that ultrasound physician will give some comments on obtained information
- 10% of interviewed subjects expressed their wish to add to the invitational letter phone number of BelAm registry office;
- 10 of interviewed subjects expressed their wish to get prescribed medicines and vitamins free;
- more than 10% of interviewed subjects wished successful development to the Project and to cover as much people as possible

**Milestone 8:** **Continue creating initial data base of exposed "in utero".**

In the 1-st quarter Epi Group continued creating initial data base of «in utero»exposed.For the period of 01.01.2000 - 31.03.2000 information on 9,852 indvs has been entered. By 01.04.2000 the DB contained information on 70,125 children born in Belarus in the period of April 26, 1986 – January 31, 1987.

## TASK No. 3: THE INVITATION AND SCHEDULING OF SUBJECTS FOR ENDOCRINOLOGIC EXAMINATION

**Milestone 9:** **Preparation of the letters of invitation, software, and procedures for inviting and scheduling subjects for examination.**

*(Data Coordinating Center)*

As far as Gomel Branch started operating a text of invitational letters was updated:

- invitations to examination to Gomel
- invitations to follow up visits to Gomel

Software for printing invitational letters, registration log, bar-code labels has been updated considering Gomel operation.

*(Epi Group)*

For the period of 03.01.2000 - 31.01.2000 Epi Group has mailed 6864 informational letters with invitation to screening examination (all kinds of the visits). Subjects were suggested to be examined in Minsk and Gomel stationary screening centers and by the mobile team during it operation in 10 raions of Gomel oblast. Table 4 presents information on letters mailed to the cohort subjects

**Table 4**

**Information on letters mailed to the cohort subjects in the 1-st quarter 2000**

| *Month of scheduled visit (2000)* | Number of mailed letters | Type of a visit | | | | | | Type of team | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Initial | | Subseq. | | Follow up | | Mobile team | | Stationary | |
| | | abs | % | abs | % | abs | % | abs | % | abs | % |
| January | 1398 | 1367 | 97,8 | 31 | 2,2 | - | - | 630 | 23,9 | 768 | 19,9 |
| February | 2746 | 2478 | 90,2 | 113 | 4,1 | 155 | 5,6 | 1188 | 45,1 | 1558 | 40,4 |
| March | 2350 | 2229 | 94,8 | 46 | 2,0 | 75 | 3,2 | 816 | 31,0 | 1534 | 39,7 |
| **Total** | **6494** | **6074** | **93,5** | **190** | **2,9** | **230** | **3,5** | **2634** | **40,6** | **3860** | **59,4** |

From the data presented in the table it is evident that at average 93.5% of invitations have been sent to initial examination. 40.6% of letters have been sent to mobile team examination, and 59.4% to the examination in the stationary (Minsk and Gomel). The majority of subjects invited to the examination to Minsk Screening Center lives in Minsk city and Minsk oblast.

Epi group conducted analysis of subjects' responses to mailed invitations (Tables 5).

Table 5

**Distribution of epi statuses among the subjects invited to examination in the first quarter (01.01.2000 – 31.03.2000)**

| Epi status | Total (6494) | Month | | |
|---|---|---|---|---|
| | | January (1398) | February (2746) | March (2350) |
| Refusal | 12 | - | 7 | 5 |
| Death | 6 | 3 | 2 | 1 |
| Wrong address | 301 | 165 | 105 | 31 |
| Moved out of Belarus | 16 | 10 | 3 | 3 |
| Reserve | 163 | 29 | 75 | 59 |
| Unacceptable by age | 4 | 1 | 2 | 1 |
| Imprisoned | 2 | 1 | 1 | - |
| Duplicates | 33 | 10 | 13 | 10 |
| Moved inside Belarus | 40 | 7 | 29 | 4 |
| Partial disablement | 2 | 1 | - | 1 |
| Dregs of society | 5 | 2 | 1 | 2 |
| Preliminary consent | 1521 | 191 | 420 | 910 |
| Undergone screening | 1431 | 203 | 462 | 766 |
| **Total** | **2105** | **420** | **658** | **1027** |
| **%** | **32,4** | **30,0** | **24,0** | **43,7** |

From the data presented in the tables it is evident that in the 1-st quarter the response has been received on 2105 mailed letters (32.4%), consent has been received from 1521 indvs.

## TASK No. 4: THE ENDOCRINOLOGICAL EXAMINATION OF SUBJECTS, INCLUDING SUBSEQUENT DIAGNOSTIC PROCEDURES LEADING TO THE ESTABLISHMENT OF THE FINAL PATHOLOGIC DIAGNOSIS.

**Milestone 10: Screening up to 2100 subjects, including the laboratory activity for collecting and processing of blood and urine samples.**

*(Screening Center)*

*Examination*

All in all for the reported period 1595 subjects have undergone examination including 1320 initially.

Totally 5 field trips to Gomel oblast (Bragin, Vetka, Dobrush, Khoiniki, Narovlia, Mozyr, Kalinkovichi) were arranged. 793 subjects have been examined in field, including 703 initially.

85 subjects have been examined in Gomel Screening Center (83 of them – for the first time).

Distribution of patients with respect to their preliminary diagnoses is presented in Table 6.

**Table 6**

**Distribution of thyroid pathology according to the data of preliminary endocrine summary**

| Diagnosis | Revealed for the first time | | Total | |
|---|---|---|---|---|
| | Абс. | % | Абс. | % |
| Uninodular goiter | 64 | 3.8 | 86 | 5.1 |
| Uninodular goiter? | 1 | 0.06 | 3 | 0.18 |
| Multinodular goiter | 16 | 0.95 | 24 | 1.4 |
| Multinodular goiter? | 0 | 0 | 1 | 0.06 |
| Relapsed nodular goiter | 1 | 0.06 | 2 | 0.12 |
| AIT | 5 | 0.3 | 18 | 1.1 |
| AIT? | 6 | 0.3 | 7 | 0.4 |
| Goiter 1B | 7 | 0.4 | 11 | 0.7 |
| Goiter 2 | 0 | 0 | 1 | 0.06 |
| Thyroid aplasia | 0 | 0 | 1 | 0.06 |
| Subclinical hypothyroidism | 0 | 0 | 2 | 0.12 |
| Total | 100 | 6% | 156 | 9.3% |

As it is evident from presented data in the examined part of the cohort during the first quarter 5 new cases of thyroid cancer was revealed. And in 9 subjects this diagnosis was made earlier. Thus, total number of thyroid cancer patients in the examined part of the cohort is 73 (9.9 per 1.000) including 36 cases diagnosed for the first time (4.9 per 1.000).

*(Central Laboratory)*

Amount of work performed by the Central Laboratory in the first quarter is presented in Table 7.

*Procedure of quality control while performing laboratory tests.*

Procedure of QC of laboratory tests is performed in accordance with the guide for QC in laboratory procedures (GLP) which includes the sections of QC of equipment and QC of laboratory procedures. The procedure of QC consists of the following stages. While performing laboratory tests parallel estimation of biochemical-hormonal indices in the control serums. For each method not less than two control samples are used (usually with the high and the low level of estimated index). Control serums are used in each run of unknown samples. Obtained results are put at Levey-Jennings Quality Control Chart. Samples containing values exceeding the norm will be analyzed for the second time in the following run of samples. The main problem is comparison of the results of test of the same index obtained in different analyzers. In this case correlation of the results is checked by the method of calculation of correlation coefficient.

*Operational problems.*

In the first quarter like previous there was irregular delivery of reagents. The Central Laboratory submitted the final variant of request for reagents for the first quarter of 2000 on January 28, 2000. The term of delivery was defined as March 15, but actually the reagents came on March 27, 2000, and the kits for Ab-TPO estimation have not come at all (BRAHMS fault). Some expenditures even with long term expire date came in smaller amount (from 8,000 ordered vacutainers only 2,000 came, for calcium analyzer calibrator reagent was sent only one instead of ordered 20). The rest of expenditures like microcentrifuge tubes (Eppendorf), paper and color tape for printer (calcium analyzer), pipette for solution dosage and tips for pipettes have not been sent at all. It should be pointed out that to perform an activity in accordance with appropriate requirements it is necessary to have not only reagents but also expenditures like tubes pipettes, tips, etc. The Central Laboratory prepared and submitted the request for the 2-nd quarter (April 6, 2000). This request should be fulfilled in whole volume and in scheduled terms otherwise the

Central Laboratory will not follow the requirements of operational procedure. The next problem of the Central Laboratory – is out dated computer equipment. As far as laboratory computer (486) used for these purposes was bought 5 years ago (1995) it is impossible to accelerate data entry and processing, besides, the capacity of hard disk is insufficient for storage of possessed information . In order to eliminate back log in the nearest future it is necessary to buy additional up dated computer for the Laboratory. In that case data entry could be done on two computers that will significantly improve the situation with back log.

**Table 7**

**Amount of work performed by the Central Laboratory for the period of December 1996 –March 31, 2000**

| Activity | I q. 1999 | I q. 2000 | 12.1996-31.03.2000 |
|---|---|---|---|
| Totally examined | 764 | 1598 | 8739 |
| Filled forms of blood collection | 764 | 1598 | 8739 |
| Taken blood samples | 762 | 1598 | 8695 |
| Refused from blood collection | 2 | 0 | 44 |
| Filled forms of urine collection | 763 | 1533 | 8650 |
| Taken urine samples | 758 | 1521 | 8605 |
| Refused from urine collection | 6 | 12 | 45 |
| Refused from urine collection following the indications of the physician | | 65 | 89 |
| **Performed TSH tests** | 223 | 1076 | 8213 |
| T free | 0 | 0 | 746 |
| Ionized calcium | 762 | 939 | 7088 |
| Iodine in urine | 636 | 1200 | 8248 |
| Ab-TPO | 863 | 1400 | 6505 |
| AB-TG | 852 | 1392 | 6593 |
| Parathyroid hormone | 0 | 0 | 84 |
| Thyroglobuline | 0 | 1750 | 4799 |
| *Key entered forms* | | | |
| blood collection | 352 | 1141 | 7643 |
| results of blood processing | 200 | 2002 | 6033 |
| urine collection and processing | 307 | 1473 | 7237 |

**Milestone 11: Clinical examination and verification of diagnosis in patients with revealed pathology.**

*(QC Group)*

*Examination in Endocrinology Department of RCIRME Hospital*

By 01.04.2000, 43 subjects have been hospitalized.. Distribution of subjects having been treated is presented in Table 8.

As it is evident from the presented data nodular non-toxic goitre dominates in the structure of pathology among hospitalised subjects.

8 thyroid FNA have been performed during the clinical stage

**Table 8**

**Distribution of subjects with respect to the final diagnosis put in the Endocrinologic Department of the RCIRME Hospital**

| ICD code | Nosology form | Number of patients | |
|---|---|---|---|
| | | abs | % |
| 193.0 | Thyroid cancer, after surgery and (or) complex treatment | 15 | 35 |
| 241.0 | Nodular non-toxic goiter | 14 | 33 |
| 241.1 | Multinodular non-toxic goiter | 8 | 19 |
| | Relapsed diffusive-toxic goiter | 1 | 2 |
| 245.2 | AIT | 5 | 11 |
| | **Total** | **43** | **100** |

*Treatment and examination in the National Thyroid Oncopathology Center (NTOPC)*

9 subjects have been referred to the NCTOPC. Distribution of patients with diagnosis made by oncologist is presented in Table 8A.

**Table 8A**

**Distribution of patients with diagnosis made by oncologist**

| Category | Number of subjects |
|---|---|
| Initial surgery | 5 |
| Thyroid cancer | 5 |
| Thyroid adenoma | 1 |
| Repeated surgery of thyroid cancer | 2 |
| Postponed hospitalization | 1 |
| Consultation | 1 |

**Milestone 12: Conduct the cytological and pathomorphological aspects of the Project**

*(Screening Center)*

Examination of bioptates obtained in the current quarter has been performed, among them 16 cases –from the Screening Centre, 16 cases – RCIRME Hospital, and 5 cases – from NCTOP. Distribution of patients is presented in Table 9.

**Table 9**

**Distribution of subjects depending on the results of FNA**

| Conclusion | Number of conclusions | Diagnostic possibility is limited |
|---|---|---|
| **NON-INFORMATIVE** | 46% 17 | - |
| Non-neoplastic nodule | 30% 11 | 6 |
| Follicular tumor | 14% 5 | 2 |
| Cancer, suspicion to cancer | 10% 4 | 1 |
| **Total** | 100% 37 | 24.3% 9 |

* - from the total number of conclusions

*(Pathology group)*

Pathology group has made morphological estimation of hystological material of 3 patients, one of them has been operated repeatedly. Pathomorphological diagnoses of all the patients were thyroid papillary cancer. After the repeated surgery thyroid tissue does not have a growth of tumor, but there are metastases to lymph nodes.

### Milestone 13: Expert support of screening activities.

*(QC Group)*

For the reported period expert revision was made of all the forms completed by the Gomel Branch, the forms of subjects with revealed pathology and selectively of healthy subjects in Minsk Center. Percentage of revealed errors varied from 5 to 15%.

DB of ultrasound images has been revised. Images of the patiens with initially revealed thyroid cancer have been revised. Images were compared to description in Ultrasound Examination Form. No discrepances have been found.

When comparing diagnoses made at screening and hospitalization stages there were revealed 3 cases of discrepancy in principal diagnosis: 1 – in relapse of previously operated patient with thyroid cancer, and 2 cases – in number of nodules. Expert revision of clinical forms of these subjects from Screening center and RCIRME Hospital has been performed.

No deviations have been revealed between cytology and pathomorphology conclusions.

Together with the DCC an activity is continuing on completing a report of clinical and laboratory parallels, report of revealed cases of pathology. A procedure has been worked out how to conduct cross logic control of clinical forms. Selective revision of the Central Laboratory DB has been performed.

## TASK No. 5: OPERATIONAL MANUAL AND PROJECT FORMS

### Milestone 14: Updating of the Operational Manual and study forms.

By the results of activity for the previous period the following forms have been updated:
*Form of Ultrasound Examination* a new list of ultrasound conclusions was added
*Hospitalization Form (RCIRME Hospital), Hospitalization Form (National Thyroid Oncopathology Center), Preliminary summary* – section "Nodule character according to cytology data" is completed by the list of cytological conclusions.

Changes have been also introduced to the *forms of blood collection, results of blood processing, urine collection and processing.*

### Milestone 15: Development of instructions for filling in and data entry of epidemiological, screening, laboratory, and hospitalisation forms.

Instructions for filling in and key entry of data were modified in accordance with the changes having introduced to appropriate forms.

### Milestone 16: Development of quality assurance manual.

Development of code book was continued during the quarter. The following data structures have been completed: control form, medical interview form, blood collection form, results of blood processing, urine collection and processing form. Appropriate codes have been added to blank values, and to logically unused values.

## TASK No. 5: DATA MANAGEMENT

**Milestone 17: Design of part of data entry software for epidemiological, screening and hospitalisation information.**

Changes have been introduced to software for data entry of the following forms:

*Medical interview, blood collection, results of blood processing, urine collection and processing*. Modifications were made in accordance with the changes having introduced to code book with respect to blank values, and to logically unused values.

Modifications were also introduced to software for data entry of preliminary and final conclusions, hospitalization form (RCIRME Hospital), hospitalization form (NCTOP) in accordance with the changes having been introduced to appropriate forms.

In accordance with accepted variant *form of FNA and cytological examination* a software was completed for data entry, and now this software is in test run.

Software for epidemiology analysis was updated considering introduction of new epi statuses: partial disablement, dregs of society, and misidentified.

**Milestone 18: Data entry of epidemiological, screening, laboratory, and hospitalisation forms. Maintain epidemiological, screening, laboratory, and hospitalisation data bases.**

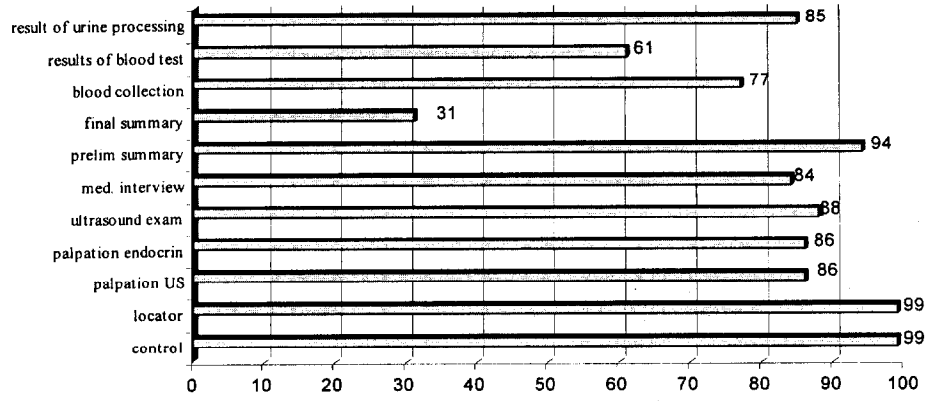



**Fig. 1. Relation of key entered screening and laboratory forms to the number of subjects having been examined (%)**

As it is evident from the presented figure there is a backlog of data entry of blood collection and processing, as well as final summary at screening which is caused by irregular delivery of reagents.

Actual situation in laboratory tests processing is reflected in Fig. 2

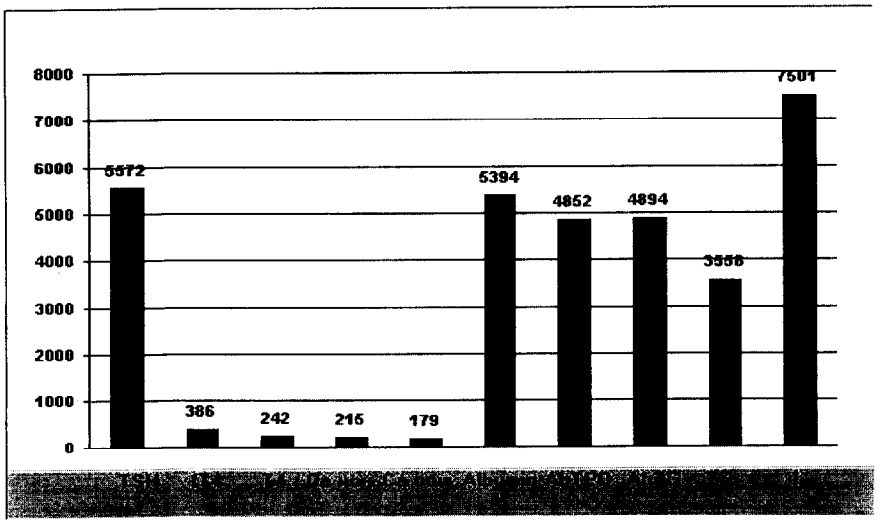



**Fig. 2. Distribution of performed laboratory tests entered to the DB.**

## Milestone 19: Transfer to the DCC file server of the data, entered in local computers of the screening center and central laboratory, and quality control of these data

*(Data Coordinating Center)*

For the reported period DCC staff transferred data from the Project Units to DCC server. Data came to DCC weekly through discs. While performing quality control of transferred data there were revealed logical discrepancies:
An automatic check was performed for:

1. Correspondence of quantity and size of nodule indicated in the form of ultrasound examination and in the forms of Preliminary and Final Summaries of Medical Screening, keyed in the 1-st quarter. As a result 10 records with discrepancies have been found (1,6 % from the total number of entered forms)
2. Correspondence of quantity and size of nodule indicated in the forms of preliminary and final summary of medical screening. As a result no discrepancy has been found.
3. Lack of keyed hospitalization (surgery) forms in case if subject has been referred from the Screening Center. There were revealed 5 missed forms.
4. Lack of keyed hospitalization forms (RCIRME Hospital) in case if subject has been referred from the Screening Center. There were revealed 6 missed forms.
5. Lack of keyed hospitalization (surgery) forms in case if subject has been referred from RCIRME Hospital. There were revealed 4 missed forms
6. There were revealed 14cases of discrepancies in the preliminary diagnoses of screening examination and hospitalization stage (RCIRME Hospital). Mentioned above cases were reviewed by experts.

Appropriate comments have been addressed to the Screening Center in order to make corrections or add missing information with further corrections to the DCC DB.

Routine control of DB on the completeness and proprietress of records was also performed.

Quality control activity was complicated by limited access to hard copies. The DCC and Screening Center archives can not operate in appropriate way because of lack of folders for forms and file cabinets.

**Milestone 20: Design software for quality assurance of screening, epidemiological, and laboratory data.**

*(Data Coordinating Center)*

In order to perform procedures of quality control of screening data the following reports on cross checks of the forms have been worked out:

1. Report on missed forms of Ultrasound Examination when in Control Form there is a record of subject coming to ultrasound examination station.
2. Report on missed forms of blood collection when in Control Form there is a record of subject coming to blood collection station.
3. Report on missed forms of urine collection when in Control Form there is a record of subject coming to urine collection station.
4. Report on missed forms of thyroid palpation when in Control Form there is a record of subject coming to Endocrinology station
5. Report on missed forms of medical interview when in Control Form there is a record of subject coming to Endocrinology station.
6. Report on missed forms of preliminary conclusion when in Control Form there is a record of subject coming to Endocrinology station
7. Report on missed forms of dosimetry interview when in Control Form there is a record of subject coming to Interview station.
8. Report on cross checks of screening forms
   - Thyroid size (Palpation Form) – Thyroid grade (Summary Forms)
   - Thyroid function (Final Summary) – TSH index (Results of Blood Processing)
   - Multinodular goiter diagnosis (Preliminary and Final Summaries) – number of nodules <2 (Preliminarand Final Summaries)
   - Nodular goiter diagnosis (Preliminary and Final Summaries) – number of nodules <>1 (Preliminary and Final Summaries)
   - Palpability of nodules (Preliminary and Final Summaries) – No – Number of palpable nodules >=1 (Palpation Form).
9. A report on searching of duplicate records when inviting subjects to the screening was also worked out. The necessity of this report was caused by the fact that when locating provisional cohort subjects through different sources of information, for subjects having different ID number but the same family name, first name and patronymic one and the same adress is defined. Therefore, for different ID one and the same person is identified.
   The analysis is conducted through family name first name and patronymic and current address of a subject. For this purpose the data of dosimetry interview and direct measurements file are used (family name, first name, and patronymic, address at the moment of the accident, date of birth) for more precise identification of the appropriate cohort subject.

Using SAS, a report has been worked out on checking records in the Control Form:

1. Correspondence of records to the type of visit – initial visit (visit 1) when it has been already marked in the form
2. Correspondence of records to the type of visit – repeated visit when there is no mark of initial visit

*(Epi Group)*

In the 1-st quarter 3454 Initial Abstract Forms have been completed and entered to the DB (including 740 entered automatically); 1542 Contact Forms (including 184 entered automatically). By 05.04.2000 Epi DB contains 17148 Initial Abstract Forms and 20907 Contact Forms.

**Milestone 21: Design a part of the query software for the epidemiological, screening and hospitalisation data.**

During the quarter a software was worked out for automatic analysis of screening findings with respect to made diagnosis and performed laboratory tests:

1. Screening findings by antibodies to TG and TPO:
2. Screening findings by TSH

A report was worked out for counting cases of revealed pathology with respect to age, gender, dose range, type of conclusion, time period.

**Milestone 22: Analysis of the results and preparation some progress report on the cohort selection, scheduling of screening exams, subject flow through exams and data entry.**

*(Data Coordinating Center).*

Fig 3 presents monthly distribution on initially examined subjects for the whole period of Project activity

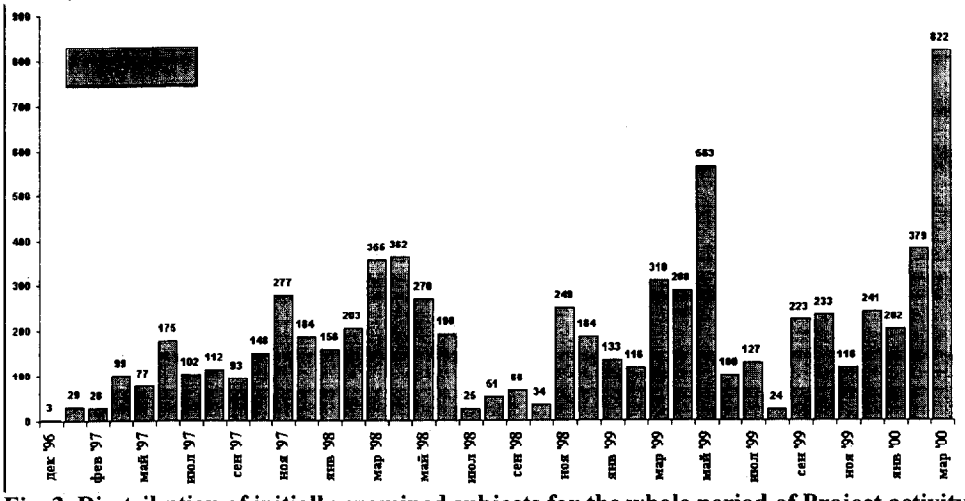



**Fig. 3. Disrtribution of initially examined subjects for the whole period of Project activity**

Fig.4 presents monthly distribution of subjects undergone repeated examination. In the first quarter 2000 no invitations to repeated scheduled examination were sent because the final decision have been accepted concerning the frequency of subjects visit to examination.

The number of subjects having come to repeated examination appeared from those who had been invited early but did not come for some reasons.

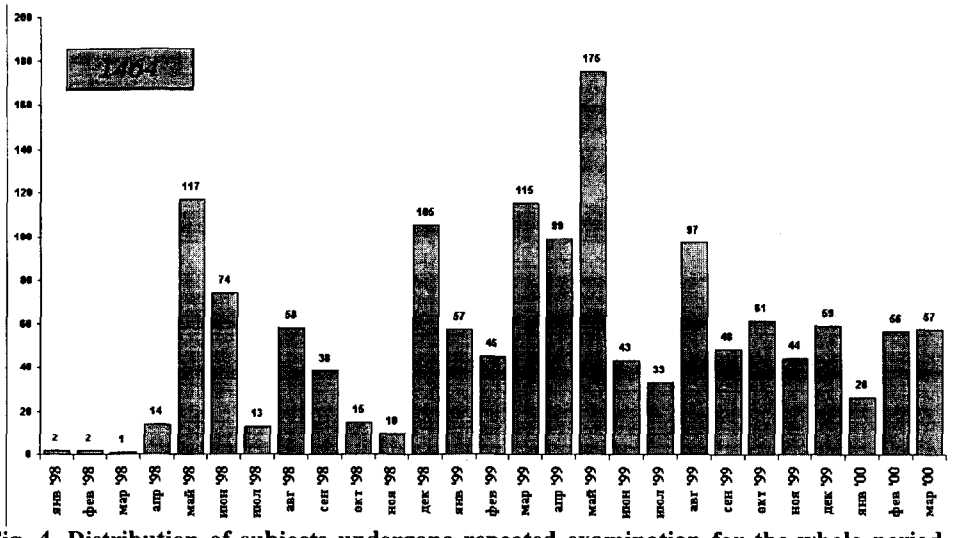



**Fig. 4. Distribution of subjects undergone repeated examination for the whole period of Project activity.**

Fig. 5 presents number of subjects having come to follow up visits (in 3-6 months0 for the whole period of Project activity.

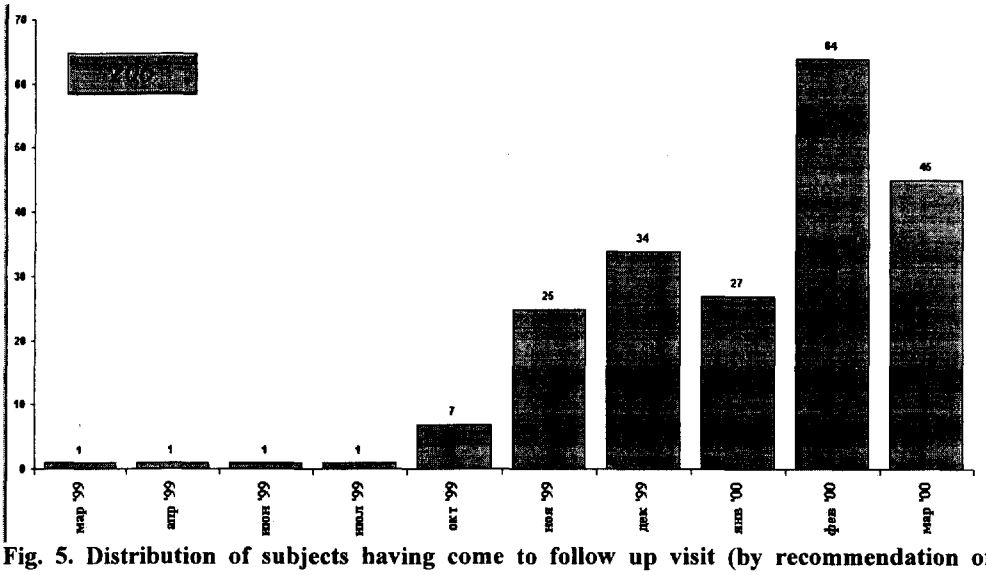



**Fig. 5. Distribution of subjects having come to follow up visit (by recommendation of physician) for the whole period of Project activity**

*(Epi Group)*

For the 1-st quarter 6494 subjects visits have been scheduled (including 6074 initial, 190 subsequent visits and 230 – follow up visits (by recommendation of physician)). 2634 subjects are scheduled to be examined by mobile team and 3860 in the stationary.

Figs. 6 and 7 present a relation of number of subjects given consent from the total number of invited subjects, and relation of number of subjects undergone examination from those given consent.

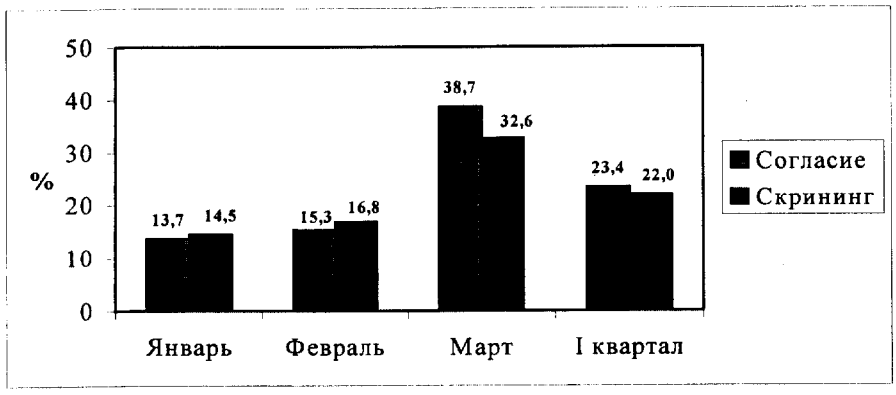



**Fig.6. Relationship between the number of subjects given consent and the total number of invited subjects**

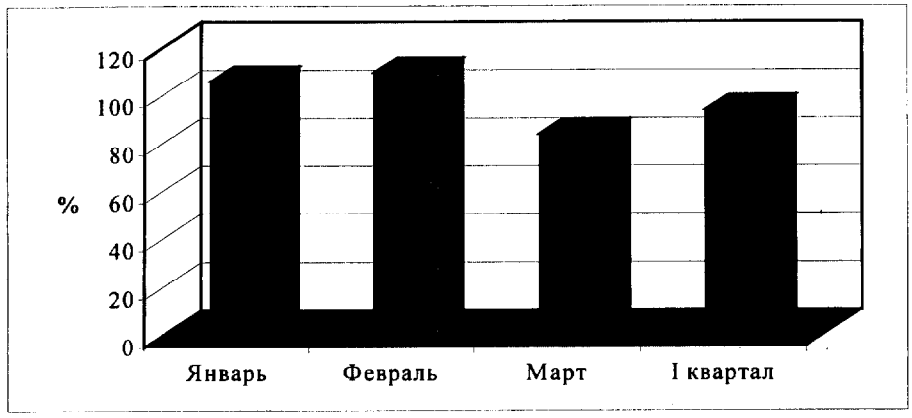
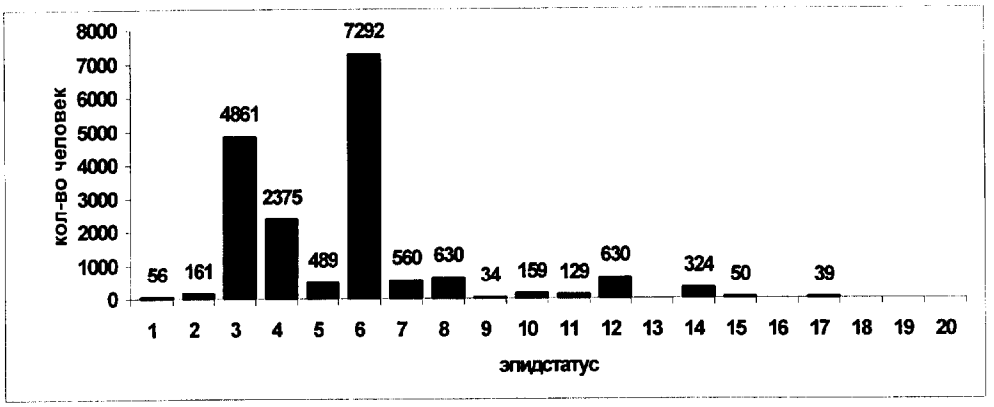



**Fig.7. Relationship between the number of subjects undergone screening and those given consent**

All in all 7,301 subjects have undergone base line screening examination, including 2,873 from high dose group, 2,074 – from mid dose group, and 2,352 – from low dose group.

By 1.04. 2000 17,783 provisional cohort subjects have been located, including 2,375 (13.4%) – wrong address, 56 0,3%) - refused from examination, 161 (0.9%) – died. Responses were received from 9,386 (52,8%) subjects, 2.499 (14.1%)are under arrangements now. Located subjects having different epidemiological statuses in the cohort are presented in Fig. (8)




| | | |
|---|---|---|
| 1 –refusal | 6 – undergone screening | 11 – imprisoned |
| 2 – death | examination | 12 – moved inside Belarus |
| 3 – no response | 7 – moved out of Belarus | 14 – duplicates |
| 4 – wrong address | 8 – reserve | 15 – examined by Sasakava |
| 5 – preliminary consent | 9 – unacceptable by age | Project |
| (Minsk Screening Center) | 10 – preliminary consent | 17 – preliminary consent |
| | (mobile team, Minsk) | (Screening Group, Gomel) |

**Fig. 8. Distribution of epidemiological statuses among located cohort subjects**

An activity for identification of cohort subjects revealed 1047 subjects whose participation in the study cohort is impossible, including 560 moved out of Belarus, 34 – unacceptable by age, 129 – imprisoned, and 324 – duplicates.

**Milestone 23: Design of image processing procedures, and data base of thyroid images.**

During the quarter an activity was continued aimed at setting up of data base of thyroid images. It is known that for this purpose it is necessary to transform the format of file structure obtained by ultrasound instrument and recorded to MOD to the format of catalogue structure which is used in the data base of images. Each MOD should be transformed to given structure. For the reported period 7 disks have been converted. Therefore, from total 158 disks by now 73 disks have been transformed. This will allow to record images to 1 CD.

It is necessary to point out the problems which slow down the process of image DB creation:

1. Lack of enough space at hard disks (local and server) which makes it possible to convert only one disk but not a set of disks.
2. Out of date computer equipment: Pentium 120 (working station at which conversion is performed), Pentium 75 (server).

## TASK No. 7: THE ESTIMATION OF INDIVIDUAL THYROID DOSES FOR MEMBERS OF THE COHORT.

The progress in conducting dosimetry interview of all the subjects undergone examination under the BbelAm Project is presented in the Table 10. The line 20000 reflects the data obtained for the first quarter of the current year. Quality control was performed to each fifth

questionnaire (155) from the number of initial interviews (725) completed by the interviewers of the Dosimetry Group for the period of 1.12.99 –29.02.2000, and to 55 questionnaires completed by Gomel Group for the period of 29.02-23.03.2000.

**Table 10**

| Year of examination | Initial interviews | Repeated intterviews | Total |
|---|---|---|---|
| 1996–1997 года | 1315 | – | 1315 |
| 1998 год | 2120 | 441 | 2561 |
| 1999 год | 2416 | 720 | 3136 |
| 2000 год | 1314 | 135 | 1449 |
| **Total** | 7165 | 1296 | 8461 |

In the first quarter 508 questionnaires completed for the current quarter and 407 - for the previous period have been entered to the DB. All in all information on 6185 cohort subjects has been entered to the DB. Quality control of data entry was performed to 55 questionnaires from 319 completed and entered for the period of 1.12.99 - 29.02.00.

There was worked out and tested an algorithm and software for reviewing of the results of interview.

There was also performed a verification of names of settlements in the initial DB. Lists of settlements were prepared to which it is still impossible to define administrative possessiveness. Initial identification of cohort subjects was performed Final identification will be done in DCC.

A software has been worked out to estimate the effect of surface contamination of human body to the readings of DP-5 and SRP-68-01 instruments during thyroid measurements.